WHAT IS CLAIMED IS:

1. An apparatus for determining an unbalance of a rotational body when said rotational body is mounted on said apparatus so as to be rotatable about a rotation axis, said apparatus comprising:

a mounting plate extending along and defining a plate plane;

a mounting fixture that is arranged on said mounting plate, and that is adapted to receive the rotational body mounted thereon so as to allow the rotational body to rotate about said rotational axis, wherein said rotational axis is oriented perpendicular to said plate plane;

an outer frame arranged at least partially outwardly around said mounting plate;

a plurality of webs respectively connecting said mounting plate to said outer frame, wherein said webs are so configured and arranged so as to support said mounting plate relative to said outer frame, to transmit from said mounting plate to said outer frame forces that are oriented along said rotational axis and that are not induced by the unbalance of the rotational body, and to allow said mounting plate to undergo translational vibration relative to said outer frame in said plate plane, wherein said translational vibration is induced in said mounting plate by the unbalance of the rotational body; and

a first vibration transducer arrangement that is coupled to said outer frame and to said mounting plate, and

that is so arranged and adapted to detect said translational vibration of said mounting plate relative to said outer frame in said plate plane.

2. The apparatus according to claim 1, wherein said webs are further so configured and arranged so as to define a pivot axis perpendicular to said rotation axis, and so as to allow said mounting plate to undergo pivotal vibration relative to said outer frame about said pivot axis, wherein said pivotal vibration is induced in said mounting plate by the unbalance of the rotational body.

3. The apparatus according to claim 2, further comprising a second vibration transducer arrangement that is coupled to said outer frame and to said mounting plate, and that is so arranged and adapted to detect said pivotal vibration of said mounting plate relative to said outer frame about said pivot axis.

4. The apparatus according to claim 3, wherein said first vibration transducer arrangement has a first effective measuring axis that is oriented always perpendicular to said pivot axis and substantially perpendicular to said rotation axis, and said second vibration transducer arrangement has a second effective measuring axis that is oriented substantially perpendicular to said plate plane at a location offset from said pivot axis.

5. The apparatus according to claim 3, wherein said first vibration transducer arrangement has a first effective measuring axis that is oriented coincident with said pivot axis, and said second vibration transducer arrangement has a second effective measuring axis that is oriented substantially perpendicular to said plate plane at a location offset from said pivot axis.

6. The apparatus according to claim 3, wherein said mounting plate comprises a plate body on which said mounting fixture is arranged and an extension arm protruding outwardly from said plate body, said outer frame comprises a plurality of frame members arranged outwardly around said mounting plate and a frame protrusion that protrudes from at least one of said frame members away from said plate plane and that defines a clearance space therein, a free end of said extension arm extends into said clearance space, and said second vibration transducer arrangement is coupled to said free end of said extension arm and to said frame protrusion in said clearance space.

7. The apparatus according to claim 3, wherein each one of said vibration transducer arrangements respectively comprises a vibration transducer connected to said outer frame, and an elastically flexibly bendable coupling rod that is connected to said mounting plate and cooperates with said transducer to couple said transducer to said mounting plate.

8. The apparatus according to claim 3, wherein at least one of said vibration transducer arrangements has a respective effective measuring axis, and is adjustably secured to at least one of said outer frame and said mounting plate so as to be slidably adjustable and selectively fixable in a direction parallel to said effective measuring axis.

9. The apparatus according to claim 3, further comprising a third vibration transducer arrangement that is coupled to said outer frame and to said mounting plate, and that is so arranged and adapted to detect said pivotal vibration of said mounting plate relative to said outer frame about said pivot axis, wherein said second and third vibration transducer arrangements are respectively located spaced away from said pivot axis on two opposite sides of said pivot axis.

10. The apparatus according to claim 2, wherein said pivot axis always lies in said plate plane.

11. The apparatus according to claim 2, wherein said webs include a first pair of webs that extend along and parallel to said pivot axis respectively on opposite sides of said mounting plate and that define said pivot axis, said webs further include a second pair of webs and a third pair of webs that respectively extend parallel to each other and parallel to said first pair of webs in said plate plane,

and said second pair of webs and said third pair of webs are located respectively spaced equidistantly from said pivot axis on opposite sides of said pivot axis.

12. The apparatus according to claim 11, wherein said webs of said second and third pairs of webs each respectively comprise a flexible sectional bar member having a square, rectangular, polygon or circular cross-sectional shape.

13. The apparatus according to claim 11, wherein said webs of said second and third pairs of webs each respectively have at least one notch therein positioned so as to increase a flexibility of each respective said web in a direction perpendicular to said plate plane.

14. The apparatus according to claim 2, wherein:

said webs include first, second and third pairs of webs;

said webs of each said pair are arranged axially aligned with each other respectively on opposite sides of said mounting plate;

said webs of said first pair of webs extend along and parallel to said pivot axis to define said pivot axis;

said webs of said first pair of webs are relatively more flexible with respect to torsion about said pivot axis so as to allow said pivotal vibration of said mounting plate and with respect to bending in said plate plane so as to allow said translational vibration of said mounting

plate, and are relatively less flexible with respect to bending perpendicular to said plate plane so as to support and transmit said forces from said mounting plate to said outer frame;

said webs of said second and third pairs of webs are flexible with respect to bending in said plate plane so as to allow said translational vibration of said mounting plate and with respect to bending perpendicular to said plate plane so as to allow said pivotal vibration of said mounting plate; and

said webs of said first pair are stiffer than said webs of said second and third pairs with respect to bending perpendicular to said plate plane.

15. The apparatus according to claim 2, wherein said webs include a first pair of webs that extend along and parallel to said pivot axis respectively on respective opposite sides of said mounting plate, and second and third pairs of webs that extend perpendicular to said pivot axis on respective opposite sides of said mounting plate.

16. The apparatus according to claim 1, wherein said mounting plate has a rectangular plan shape including two long sides and two short sides meeting each other at respective ends, and said webs include a first pair of webs arranged at a center of said long sides, and second and third pairs of webs arranged at said ends of said long sides.

17. The apparatus according to claim 1, wherein at least one of said webs has at least one notch therein positioned so as to increase a flexibility of said web with respect to bending in said plate plane.

18. The apparatus according to claim 1, wherein said rotation axis is oriented substantially vertically, and said plate plane is oriented substantially horizontally.

19. The apparatus according to claim 1, wherein said rotation axis is oriented substantially horizontally, and said plate plane is oriented substantially vertically.

20. The apparatus according to claim 1, wherein said webs include a first pair of webs that extend along an intersection of said plate plane and a plane containing said rotation axis.

21. The apparatus according to claim 20, wherein said webs of said first pair each respectively have a cross-sectional shape that is flexurally stiff in a direction so as to resist bending due to said forces that are oriented along said rotation axis and are not induced by the unbalance of the rotational body.

22. The apparatus according to claim 21, wherein said cross-sectional shape is a rectangular cross-sectional shape having longer rectangle sides oriented perpendicular to said plate plane.

23. The apparatus according to claim 1, wherein said mounting plate is connected and supported relative to said outer frame only by said webs, and expressly excluding all additional supports for said mounting plate and for the rotational body.

24. The apparatus according to claim 1, wherein said mounting plate, said webs and said outer frame are integrally formed with one another so as to form thereof a single integral component.

25. The apparatus according to claim 1, wherein each one of said vibration transducer arrangements respectively comprises a vibration transducer connected to said outer frame, and an elastically flexibly bendable coupling rod that is connected to said mounting plate and cooperates with said transducer to couple said transducer to said mounting plate.

26. A method of determining an unbalance of a rotational body, comprising the following steps:

a) mounting said rotational body on a mounting fixture of a dynamometer element;

b) rotating said rotational body mounted on said fixture about a rotational axis;

c) transferring all forces and moments originating from said rotational body into and through said dynamometer element, thereby causing at least a portion of said dynamometer element to undergo at least one of translational vibration in a plane of said dynamometer element and pivotal vibration about a pivot axis; and

d) separately detecting at least one of said pivotal vibration and said translational vibration separately from one another.